

USSN 10/808,157
Attorney Docket No. 2003-0022-01**RECEIVED
CENTRAL FAX CENTER****FEB 08 2007****Remarks**

Claims 1-127 are pending in the above-captioned United States Patent Application. Claims 13-28, 35-42, 55-70, 77-84, 97-112 and 119-126 are withdrawn from consideration. Claims 29-34, 71-76, 113-118 and 127 are allowed. Claims 1, 3, 7, 11, 43, 45, 49, 53, 85, 87, 91 and 95 stand rejected. Claims 2, 4-6, 8-10, 12, 44, 46-48, 50-52, 54, 86, 88-90, 92-94 and 96 stand objected to.

Election/Restrictions

As noted in the October 4, 2006 Office Action, Examiner has found Applicants arguments persuasive and has permitted the Claims 29-34, 71-76, and 113-118, which were previously-identified with Group III, to be rejoined with Claims 1-12, 43-54, 85-96, and 127 of Group I. Applicants wish to thank the Examiner for consideration of their arguments and for rejoining the above-mentioned Claims with Group I.

Information Disclosure Statement

The Office Action indicates that the Information Disclosure Statement filed on May 10, 2004 fails to comply with the provisions of 37 C.F.R. 1.97, 1.98 and MPEP § 609 because it lacks one foreign reference with document number 2696285 and its English translation.

Applicants submit that the foreign reference 2696285, and its corresponding English translation, were duly submitted with an Information Disclosure Statement filed on May 6, 2004. Applicants attach the postcard submitted in connection with the filing of this Information Disclosure Statement, in which the U.S. Patent and Trademark Office acknowledges receipt of the Information Disclosure Statement, PTO-1449 form, and 33 references.

Accordingly, for at least the above reasons, Applicants submit that reference 2696285 and its corresponding English translation have the benefit of the original date of submission of the Information Disclosure Statement, May 6, 2004. However, for the convenience of the Examiner, Applicants include a copy of reference 2696285, and its corresponding English translation.

UISSN 10/808,157
Attorney Docket No. 2003-0022-01

Claim Rejections – 35 U.S.C. § 112

Claims 3, 7, 11, 45, 49, 53, 87, 91, and 95 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly Claims the subject matter.

Applicants have amended Claim 3 such that it depends from Claim 2 in order to correct the antecedent basis of “the at least one flexure arm.” Accordingly, Applicants believe that Claim 3 is in condition for allowance, and claims 7 and 11, which depend from Claim 3, are also allowable.

Applicants have amended Claim 45 such that it depends from Claim 44 in order to correct the antecedent basis of “the at least one flexure movement means.” Accordingly, Applicants believe that Claim 44 is in condition for allowance, and Claims 49 and 53, which depend from Claim 45, are also allowable.

Applicants have amended Claim 87 such that it depends from Claim 86 in order to correct the antecedent basis of “the at least one flexure movement mechanism.” Accordingly, Applicants believe that Claims 91 and 95, which depend from Claim 87, are also allowable.

Claim Rejections – 35 U.S.C. § 102(a)

Claims 1, 43, and 85 stand rejected under 35 U.S.C. § 102(a) as being anticipated by Applicants' admitted prior art (AAPA).

Applicants' Claim 1 relates to a high power narrow band, high repetition rate laser light source system line narrowing unit comprising a fast moving angularly positionable tuning mirror. A mirror mounting frame is comprised of a first material and a relatively flat mounting surface area. A reflective optic is comprised of a second material having a coefficient of thermal expansion different from that of the first material of the mounting frame. In Applicants invention of Claim 1, there are at least two attachment points of attachment between the mounting frame and the reflective optic on the mounting frame surface. At least one flexure mount formed in the mounting frame that is flexible in a flexure axis corresponding to a longitudinal axis of thermal expansion of the mounting frame and the reflective optic, positioned at one of the at least two points of attachment.

USSN 10/808,157
Attorney Docket No. 2003-0022-01

Applicants submit that the AAPA does not show or describe the feature of "at least one flexure mount formed in the mounting frame that is flexible in a flexure axis corresponding to a *longitudinal axis* of thermal expansion of the mounting frame and the reflective optic, positioned at one of the at least two points of attachment" (emphasis added). Rather, the spring mounted clips 168 (i.e., the "flexure mounts") of the prior art device illustrated in FIG. 6B would not be flexible in the same axis (i.e., the longitudinal axis) of thermal expansion of the mounting frame and reflective optic, as Applicants' claimed invention.

The disadvantage of the prior art flexure mounts, such as those illustrated in FIGS. 6A-6B, is that the forces exerted on the optical element in the mount can be sufficient to introduce discernable and unacceptable effects on such things as beam profile, wavelength, bandwidth or the like. Applicants' claimed invention is directed towards correcting this problem.

For example, Applicants' flexure assembly 170 is flexible in the longitudinal flexure axis, is illustrated in FIGS. 7, 8, 9A and 9B. In FIG. 7, mirror mount 152 containing mounting balls 156 and 158 on a flexure mount assembly 170 that enables translation of the mounting ball along the principal axis of thermal expansion as the mirror 154 and mount 154 differentially thermally expand. Shown in more detail in FIG. 8, the flexure mount assembly 170 can comprise, *e.g.*, a flexure mount 180 which can contain a cylindrical opening 180a, shown in FIG. 9, which is flexibly attached to the mount 152 by a pair of upper (as shown in the figure) and lower (as shown in the figure) flexure arms 186 and 188. The flexure arms 186 and 188 and the flexure mount 180 itself are separated from the rest of the mount 152 by slots 182 and 184 through the material of the mount 152. *See, e.g.*, Applicants' specification, page 15, lines 8-18. Applicants' flexure mount 180 can easily translate under force induced by any sticking action between the mirror 154 and the mounting ball 158 in the cylindrical opening

USSN 10/808,157
Attorney Docket No. 2003-0022-01

180a. Distortion of the mirror face and the concomitant very severe undesirable effects are effectively eliminated according to this aspect of an embodiment of the present invention. *See, e.g.*, Applicants specification at page 15, lines 19-26.

Applicants submit that at least for the reasons above, Claims 1, 43, and 85 are in condition for allowance. Accordingly, Applicants submit that Claims 2-12, 44-54, and 86-96, which depend from Claims 1, 43, and 85, respectively, are allowable.

Claim Rejections – 35 U.S.C. § 103(a)

Claims 1, 43, and 85 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,801,891 to Lloyd (hereinafter, *Lloyd*).

Lloyd relates to a flexure structure for mounting an element such as a mirror in an optical device to a frame such as a telescope support structure that includes a flexure blade defining a fork having three coplanar tines. A mounting pad is located on the center tine for attaching the flexure blade to the mirror. A pair of mounting feet are located on the outside tines for attaching the flexure blade to the frame. The relative sizes of the tines being such that zero moment is applied to the mirror by the flexure structure when the mirror is displaced relative to the frame.

Applicants agree with the Examiner that “*Lloyd* does not disclose a laser light source system with fast moving angularly positionable tuning mirror.” However, Applicants submit that it would not have been obvious to one of skill in the art at the time that the invention was made to use the mirror mounting apparatus disclosed by *Lloyd* to a laser system. Applicants submit that the invention of *Lloyd* relates to a flexure mounting structure useful for mounting a mirror element in a telescope (*see, e.g.*, 1: 7-10 of *Lloyd*) and would not be capable of being used in a laser system such as Applicants’ high power, narrow band laser light source system.

In addition, Applicants further submit that one would not combine the mirror mounting apparatus of *Lloyd* with a high power narrow band, high repetition rate laser light source system because the mirror mounting apparatus of *Lloyd* would not provide adequate characteristics to be able to hold a high power narrow band laser light source to

USSN 10/808,157
Attorney Docket No. 2003-0022-01

a specific wavelength that would be needed for applications such as lithography. Although the mirror mount of *Lloyd* may be sufficient for telescope systems, it would not be stiff enough in the direction perpendicular to the mirror surface for laser lithographic applications. Thus, the forces exerted on the optical element in *Lloyd*, if it were utilized in a laser system such as the Applicants' system, would introduce discernable and unacceptable effects on such things as beam profile, wavelength, bandwidth or the like. These effects are unacceptable for applications such as lithography, as described in Applicants' specification. As noted above, an advantage of Applicants' claimed invention is to prevent the introduction of discernable and unacceptable effects on such things as beam profile, wavelength, bandwidth of the laser light.

Applicants submit that at least for the reasons above, Claims 1, 43, and 85 are in condition for allowance. Accordingly, Applicants submit that Claims 2-12, 44-54, and 86-96, which depend from Claims 1, 43, and 85, respectively, are allowable.

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Conclusion

Applicants authorize the Commissioner to charge \$450.00 to our Deposit Account No. 03-4060 for the two-month extension of time. Applicants do not believe that any other fees or charges are due for the continuing prosecution of the above captioned U.S. Patent Application, but in the event that there are the Commissioner is hereby authorized to charge the Deposit Account of applicants' assignee, Cymer, Inc. Deposit Account No. 03-4060 for any such fees or charges.

Respectfully submitted,


Kevin T. Roddy, Reg. No. 50,577

February 8, 2007

Cymer, Inc.
17075 Thornmint Court
MS 4/2C
San Diego, CA 92127
Customer No. 21773
Telephone: (858) 385-7185
Facsimile: (858) 385-6025

PATENT ABSTRACTS OF JAPAN

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(21)Application number : 03-352812

(71)Applicant : KOMATSU LTD

(22)Date of filing : 16.12.1991

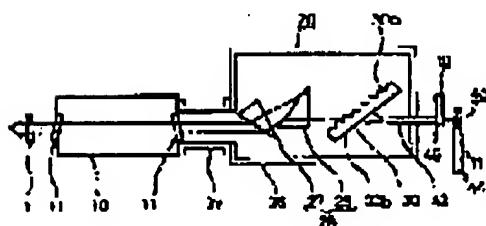
(72)Inventor : WAKABAYASHI OSAMU
KOBAYASHI YUKIO
KOWAKA MASAHIKO

(54) NARROW-BAND OSCILLATION EXCIMER LASER EQUIPMENT AND ITS PURGING METHOD

(57)Abstract:

PURPOSE: To eliminate the fluctuation of oscillation wavelength of output laser light due to the change of refractive index of gas on the grating surface, and restrain heat generation of optical elements, by arranging an introducing port of clean gas for purging on the rear side of the grating, and preventing the clean gas from flowing on the trench surface of the grating.

CONSTITUTION: The title equipment is constituted of a front mirror 1, a laser chamber 10 for oscillating laser, and a narrow bandwidth equipment for narrowing the laser bandwidth, which equipment is constituted of a prism beam expander 25, a grating 30, a cabinet 35 and a clean gas equipment 40 which blows out clean gas from a clean gas introducing port 42 via a flowmeter 46 from a clean gas cylinder 44. The clean gas introducing port 42 is arranged on the rear side 30b of the grating 30. The gas flow is



not generated on the trench surface 30a of the grating 30, so that the fluctuations of the

center wavelength of output light and a beam profile do not occur. The inside of a narrow bandwidth box 35 and the inside of a pipe 37 are filled with the clean gas.

LEGAL STATUS

[Date of request for examination] 03.04.1996

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 2696285

[Date of registration] 19.09.1997

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UNITED STATES PATENT AND TRADEMARK OFFICE

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d L. Sandstrom, et al.

OPTICAL ELEMENT IMPROVEMENTS

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ment; PTO-1449 form and 33 references

RECEIVED IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Cymer Docket No. 2003-0022-01
In re: Application of: Richard L. Sandstrom, et al.
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Filed: March 23, 2004
Title DUV LIGHT SOURCE OPTICAL ELEMENT IMPROVEMENTS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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Information Disclosure Statement; PTO-1449 form and 33 references

Cymer, Inc.
Date Mailed: May 6, 2004

